DEFENSE INFORMATION INFRASTRUCTURE (DII)

COMMON OPERATING ENVIRONMENT(COE)

DISTRIBUTED FILE SERVICE SERVER (DFSS) Segment v1.0.0.5
Installation Instructions for Solaris Operating System 2.5.1

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Purpose

These instructions are for installing and configuring the DFSS segment. These instructions provide valuable information to correctly use and configure a robust DFS filespace.

References

- Transarc DCE 1.1 Release Notes for Solaris Version 2.5[1]
- Transarc DFS Administration Guide
- Transarc DFS Administration Reference
- Transarc DCE 1.1 Command Reference
- Transarc DCE 1.1 Command Reference Supplement
- Transarc DCE Installation and Configuration Guide

What You Will Need During DFSS Installation

- The root password. The Transarc **dcesetup** commands used in the installation of DFSS require the root permission.
- The cell administrator's password. The Transarc **dcesetup** commands and other scripts created for the purpose on installing DFSS will prompt for the cell administrator's password..
- Some knowledge of DCE and DFS. DFS is an extended service of DCE and therefore knowledge of DCE cell administration is assumed in this guide. Although the DFS components are briefly described in these instructions, you should read the references above to gain a better understanding of DFS.
- Familiarity with the COE Installer.

Machine Requirements

Total Memory: 32MB RAM (64MB RAM recommended)
Available Swap Space: 72MB

De-Installation of DFSS Segment

The DFSS segment cannot be de-installed using the COE Segment Installer. Please read the DFSS segment release notes for instructions on how to successfully de-install.

[1] Transarc DCE 1.1 Upgrade and Release Notes for Solaris Version 2.5, dated April 1996, state "Support for Solaris 2.5.1 is not included as part of this release." This is INCORRECT. Transarc DCE for Solaris 2.5 will operate normally on a Solaris 2.5.1 machine.

Explanation of the DFS Configuration Menu:

The DFS Configuration Menu appears during the installation of DFSS, but it can be accessed at any time through the **Network | DCE** menu. After installation, you should logout and log back into the machine for the changes to the sysadmin menu to take effect.

```
***  DFS SERVER CONFIGURATION MENU on sulu  ***

  1) View Current DCE Configuration
  2) Configure DFS Fileset Location Database Machine
  3) Configure DFS File Exporter Machine
  4) Build and Initialize "root.dfs" Fileset
  5) Configure DFS Backup Database Machine

 99) EXIT

Please Enter Your Selection and Press <RETURN>
```

View Current DCE Configuration

This option displays all the possible DCE configurations, tests whether the component is installed, and determines which DCE components are configured and which are not. This option uses the Transarc **dcesetup info** command. The output is for the local machine only.

Configure DFS Fileset Location Database Machine

The Fileset Location Database (FLDB) machine keeps track all the DFS filesets in the cell. At least one FLDB should exist in each cell. If you are installing DFSS for the first time in your cell, you must select this option first. One FLDB in a cell is a single point of failure. Three (3) FLDBs in a cell are recommended. An odd number of FLDBs is also recommended because the FLDB is truly a distributed replicated database and synchronizes with other FLDBs in the cell.

Configure DFS Fileset Exporter Machine

The Fileset Exporter (sometimes called Fileset Server) houses the filesets (i.e. files and directories) which will comprise the DFS filespace. Fileset Exporters can only be configured if the cell contains at least one FLDB. To house the filesets, a hard disk partition must be assigned as an aggregate. Configuration of a Fileset Exporter does not configure the aggregates. Use the Transarc **configaggr** command to configure aggregates on a Fileset Exporter machine.

Build and Initialize the "root.dfs" Fileset

When configuring the root.dfs fileset, the machine must be configured as a DFS Client and a DFS Fileset Exporter. If the root.dfs fileset already exists in the cell, no processing occurs under this option. If the machine is not a DFS client, you will be given the chance to configure the DFS client portion at this time.

```
This machine must be configured as a DFS client before continuing.
DO YOU WISH TO CONFIGURE THE DFS CLIENT AT THIS TIME ? (y)
```

Continuing, you will be asked to identify an unmounted disk partition to assign as a DFS aggregate.

Example:

```
Full device name of the disk partition ? /dev/dsk/c0t2d0s5
Aggregate Name ?  sulu_aggr1
```

Once identified and named, the aggregate is configured using the Transarc **configaggr -fstype lfs** command and the root.dfs fileset is created, mounted and initialized. The initialization of the root.dfs fileset performs the following functions:

- The access control lists on the */.:/fs* directory is changed to the following:

```
/.:/fs Object ACL
{mask_obj r-x---}
{user_obj rwxcid}
{group_obj r-x---}
{other_obj r-x---}

/.:/fs Initial Container ACL
{mask_obj r-x---}
{user_obj rwxcid}
{group_obj r-x---}
{other_obj r-x---}

/.:/fs Initial Object ACL
{mask_obj r-----}
{user_obj rwxc--}
{group_obj r-----}
{other_obj r-----}
```

For an explanation on access control lists (ACLs) see the DFS Administration Guide.

- Ownership of the */.:/fs* directory is changed from local root to the cell administrator. This option determines the UID of the cell administrator account in the registry and executes a **chown** <UID> */.:/fs*, giving ownership of the */.:/fs* directory to the cell administrator.

- An explicit read/write mount point for the root.dfs fileset is created at */.:/fs/.rw*. Thus */.:/fs* and */.:/fs/.rw* both point to the root.dfs fileset. This is critical to successfully support DFS replication. Later when you replicate the root.dfs fileset, */.:/fs* will always point to the read-only copy and */.:/fs/.rw* will always point to the read/write fileset.

Important Note: Any attempt to inspect */.:/fs/.rw* before replication fails with:

```
% ls -l   /.:/fs/.rw
./.rw: Number of symbolic links encountered during path name traversal exceeds
MAXSYMLINKS
```

This is expected because both **.** and **..** point to the same object, root.dfs. Once you replicate the root.dfs fileset, this error will disappear. To replicate the root.dfs fileset use the **fts setrepinfo**

A Backup Database machine is used in very large cells, or cells with more than 50 filesets, to automatically backup of DFS Backup Filesets. Most cells will not require the configuration of the DFS Backup Database. For more information see the Transarc DFS Administration Guide.

Exit
Exit the DFS Configuration Menu.

How to Validate DFSS Installation and Other Useful DFS Commands

After creating a DFS File Exporter and creating the root.dfs fileset, you are ready to start sharing files and directories. Log as the cell administrator using **dce_login** command and type **mkdir /.:/fs/testdir** and **touch /.:/fs/testfile**. Then go to a different machine in your cell and configure another DFS client machine.

Once DFS client is configured on the second machine, log into DCE using **dce_login** and change directories to */.:/fs*. There you will find the *testfile* and *testdir* you created on the other machine.

fts lsft -fileset root.dfs and fts lsft .
The **fts lsft** command lists information about a fileset or can list information about the fileset you current working directs resides in.

Sample Output:

```
# cd /.:/fs
# fts lsft .
```

```
root.dfs 0,,1 RW LFS     states 0x10010005 On-line
    sulu, aggregate sulu_aggr1 (ID 1)
    Parent 0,,0       Clone 0,,2       Backup 0,,3
    llBack 0,,0       llFwd 0,,0       Version 0,,9
        Infinite alloc limit;         18 K alloc usage
          5000 K quota limit;         18 K quota usage
    Creation Fri Jul 12 18:03:52 1996
    Last Update Fri Jul 12 18:50:42 1996


root.dfs
        readWrite   ID 0,,1  valid
        readOnly    ID 0,,2  invalid
        backup      ID 0,,3  invalid
number of sites: 1
   server           flags     aggr   siteAge principal      owner
sulu                RW       sulu_aggr1 0:00:00 hosts/sulu     <nil>
```

dce.ps

Perhaps the most useful Transarc DCE command which lists all DCE and DFS daemons running on a machine. Below is our sample output followed by and explanation of which daemons to look for.

```
% dce.ps
DCE daemons
F S   UID   PID  PPID  C PRI NI     ADDR     SZ    WCHAN TTY      TIME COMD
8 S     0   269     1 80  40 20 fc41c678   1562 fc41c848 ?        0:24 dced
8 S     0   306     1 80  41 20 fc41d998   1523 fc57d576 ?        0:02 cdsadv
8 S     0   319     1 80  41 20 fc41ccd8   1453 fc35a35e ?        0:21 dtsd

NOT_RUNNING: secd pwd_strengthd cdsd gdad dts_ dtstimed auditd nsid

DFS daemons
F S UID PID PID PRI NI     ADDR    SZ   WCHAN TTY TIME COMD
8 S  0  377  1  41 20 fc8e8980  1595 fc44ad98 ?   0:14 dfsbind
8 S  0  397  1  46 20 fc941cc8  1289 fc4ad896 ?   0:00 dfsd
8 S  0  398  1  47 20 fc941668  1289 fc4adc7a ?   0:00 dfsd
8 S  0  399  1  46 20 fc941008  1289 fc4adc7a ?   0:00 dfsd
8 S  0  386  1  39 20 fc8e7000  1501 fc44be50 ?   0:00 fxd
8 S  0  387  1  41 20 fc8e7660  1501 fc4adf3e ?   0:00 fxd
8 S  0  358  1  41 20 fc463340  1539 fc463510 ?   0:16 bosserve
8 S  0  359  1  41 20 fc462680  1678 fc8eccae ?   0:05 flserver   FLDB
0 S  0  360  35841 20 fc462ce0  1499 fc546026 ?   0:02 ftserver   File Exporter
8 S  0  361  35840 20 fc462020  1654 ee8f5eac ?   0:04 bakserver  Backup DB

NOT_RUNNING: dfsgwd NFS Gateway repserver upserver upclient

License daemons
 F S   UID   PID  PPID  C PRI NI     ADDR     SZ    WCHAN TTY      TIME COMD

NOT_RUNNING: llbd glbd netlsd
```

Unconfiguring and De-installing the DFSS Segment

The DFSS segment cannot be de-installed using the COE Installer. The reason is that DFS servers cannot be unconfigured separately from the other DCE components. The **dcesetup unconfig** command will unconfigure all DCE/DFS components resident on the machine, including the DCE/DFS client portion.

Executing the **dcesetup unconfig** command on any DFS client or DFS server machine will produce the following warning:

> WARNING "Please gracefully shutdown and restart your system now to stop the kernel-space DFS daemons. After your system comes back up please re-issue the "dcesetup unconfig -force" command to remove the remaining configuration data."

After completely unconfiguring DCE, you can de-install the Transarc DFS package using the **dcesetup uninstall dfsserver** command. Finally, remove the DFSS segment directories under the */h* partition with the **rm -r /h/COTS/DFSS** command.